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FUSIFORM RUST HAZARD SURVEY ON TWO DISTRICTS OF THE SABINE NATIONAL FOREST SPRING, 1984

by

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Abstract

Fusiform rust incidence (including branch cankering) ranged from 3 to 10 percent in six loblolly pine stands on the Yellowpine District of the Sabine National Forest. Ten stands on the Tenaha District sustained between 1 and 15 percent incidence. Incidence of rust-killed trees was very low on these Districts, less than 2 percent and less than 1 percent, respectively. Rust hazard to loblolly pine on the Sabine N.F. is quite low and should present little problem to stand regeneration.

INTRODUCTION

Little is known about the fusiform rust hazard in Texas. The Southwide survey in 1973 did not include Texas, and hazards maps do not exist for Texas (Phelps, 1973). Currently there have been reports of increased rust on slash pine on National Forest land south of the Sabine National Forest. The purpose of this evaluation is to define rust hazard to loblolly pine on the Sabine National Forest.

METHODS

Because Sabine National Forest pine stands are irregular in shape, include areas of hardwoods, and possess dense competition, a systematic survey was

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chosen. Plantations evenly distributed were selected on the two districts (Figure 1). Three systematically selected rows of 100 trees each were surveyed. These were located in the field by measuring the stands' dimensions at right angles to the dozer lines and selecting rows 25, 50 and 75% of the distance across the stand. Dozers were used to precommercially thin. Planting rows were followed as closely as possible.

After six mostly unthinned stands on the Yellowpine were observed the survey was discontinued due to the dense competition.

Ten pre-commercially thinned stands were selected for survey on the Tenaha.

Rust condition classes included: healthy; stem-cankered but merchantable; rust caused unmerchantable or dead; and, branch cankered.

Volume projections were not attempted since the Nance, Froelich and Shoulders model is designed to be applied to unthinned slash pine plantations without natural regeneration. Significant natural regeneration is present in the plantations on these Districts.

RESULTS

Rust mortality was not observed in 8 of the 10 stands on the Tenaha, nor in 3 of 6 on the Yellowpine. The highest percentage of rust caused mortality for any stand on the Tenaha was 1.7; on the Yellowpine, 1.3. Galled trees (including branch cankers) averaged only 5.1 percent on the Tenaha and 6.9 percent on the Yellowpine. A listing of stands on the two Districts are shown in Tables 1 and 2.

To help National Forest personnel in thinning loblolly pine three rows were surveyed in a 12-year old stand. The thinning will be at age 15 and depending on residual volume probably again at age 25. Thus only trees with 40% stem girdles or deformed stems were tallied. This came to 5.7 percent. The supervisory forester will decide whether to mark with rust considered or merely to row thin.

DISCUSSION

Surveying stands on these Districts was difficult. Prescribed fire is infrequently used on the National Forests in Texas due to the small number of burning days, lack of fire crew members and safety disadvantages. Thus competing vegetation greatly hinders surveying unthinned plantations. Plantations older than ten years do not give a reliable indication of incidence since rust mortality has often passed unnoticed. Most slash pine stands on these Districts are older than 10. Thus this survey was concentrated in pre-commercially thinned loblolly pine stands less than ten years old. Thinning by dozer or hydro-axe, if performed within the previous two years, allowed access to the stands' interior.

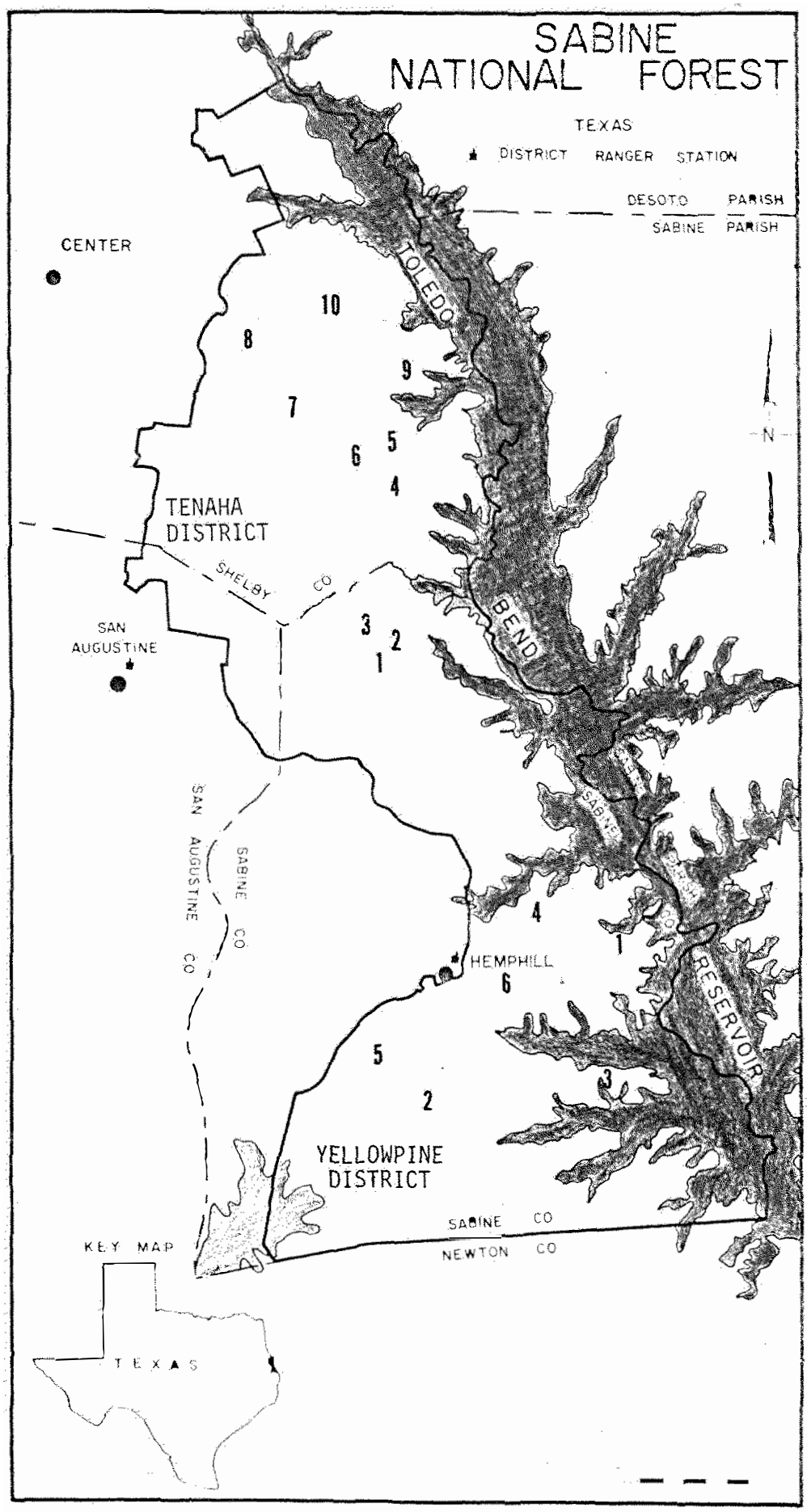

Figure 1. Location of Stands Observed for Fusiform Rust Incidence on the Tenaha and Yellowpine Ranger Districts - Sabine National Forest - April, 1984.

Table 1. *Fusiform Rust Incidence (%) and Stand Data Collected on the Tenaha Ranger District (all pre-commercially thinned).*

Stand No.	Compartment	Age	Healthy	Galled	Rust Mortality
1	69	6	98.3	1.7	0
2	69	6	90.0	8.3	1.7
3	69	9	94.7	5.3	0
4	43	8	94.3	5.7	0
5	36	9	98.7	1.3	0
6	36	9	94.0	6.0	0
7	27	8	84.4	15.3	0.3
8	15	8	96.7	3.3	0
9	21	6	98.3	1.7	0
10	14	7	97.3	2.7	0
Average		7.6	94.7	5.1	0.2

Table 2. Rust Incidence and Stand Data Collected on the Yellowpine Ranger District.

Stand No.	Compartment	Age	Healthy	Galled	Rust Mortality	Stand Type
1	83	8	89.2	9.5	1.3	Pre-commercial Thinning
2	96	8	93.7	6.3	0	Unthinned Plantation
3	109	10	93.3	6.7	0	Unthinned Plantation
4	78	8	91.0	8.3	0.7	Unthinned Plantation
5	93	6	91.9	7.8	0.3	Unthinned Plantation
6	86	4	97.1	2.9	0	Unthinned Plantation
Average		7.3	92.7	6.9	0.4	

Rust hazard is currently very low on these two districts. This is indicated by the low rust mortality and a low number of galled stems which exceeds 10 percent in only one stand. If selective thinning is used Forest Pest Management recommends thinning trees which are girdled over 40% of their circumference. This removes trees not likely to survive until the next thinning at age 25. If row thinning is used residual cankering is not expected to cause management problems but some loss should be expected to rust caused mortality prior to the next thinning.

REFERENCES CITED

Phelps, William R. Fusiform rust incidence survey. 1973. Atlanta, GA: USDA, Forest Service, SEA, S&PF.

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